

REMARKS

Claims 1-17 and 50 were examined in the Final Office Action mailed May 30, 2007, while claims 18-49 stand withdrawn pursuant to election/restriction requirement. Claim 50 has been canceled, without prejudice to the subject matter therein.

The Applicants wish to express their appreciation for the Examiner's helpful comments in the Final Office Action mailed May 30, 2007, the Advisory Action mailed September 5, 2007 and in the subsequent telephone discussions of the pending claims, supporting Specification disclosure and inventor declaration. The following remarks supplement these discussions.

1, The Amendments And Resolution of § 112 Concerns. As noted in the May 30, 2007 Final Office Action, the September 28, 2006 Declaration teaches removal of filter dust from a partially-dried membrane "by mechanical brushing while rinsing with water." May 30, 2007 Final Office Action at 2. Accordingly, the Applicants have amended claim 1 to recite in step (b) that "prior to drying the resulting feedstock membrane, removing filter dust impurities by mechanical brushing while rinsing with water from at least one side of said partially-dried feedstock membrane from which the solvent is evaporated in the evaporation process of step (a)." Conforming amendments have also been made to cancel claims 3-14, drawn to alternative embodiments, without prejudice to the subject matter therein.

As a related matter, during the recent discussions it was noted that paragraph 8 of the September 28, 2006 declaration, describing the finishing

processes of the present invention, recites that “the filter dust was removed ... by mechanical treatment with a rotating brush under controlled water rinsing and application of diluted sodium alkyl sulfonate.” A question was raised as to whether the original Specification provided sufficient support under 35 U.S.C. § 112 for the use of sodium alkyl sulfonate as a cleaning agent with the water. Upon further review of the Specification, the Applicants note that the Specification establishes that recited portion of declaration paragraph 8 does *not* refer to use of sodium alkyl sulfonate as a filter dust removal agent, but as a wetting agent added *after* the mechanical brushing.

The original specification identifies in the description of preferred embodiments cleaning of filter dust by used of physical contact devices and/or cleaning fluids (such cleaning fluids including water, gases, and mixtures of water and alcohols). *Separately*, the original specification describes the impregnating of the membrane with additives and/or reagents, such as wetting agents (of which sodium alkyl sulfonate is one), to enhance the membrane’s utility when used in analysis application.

For example, in the Examples described at original Specification pages 10-11 and illustrated in Fig. 3, the Applicants describe equipment and process in which the newly-formed membrane passes through *two* rinsing devices (baths 2, 4), where within the first rinsing device mechanical cleaning is performed with “rotating wiper roller (3) configured as a brush” and the application of “washing liquid (11) (preferably water or water/alcohol mixture).” Specification at 10:5-18; 10:31-11:3 (only mechanical brushing with water or water/alcohol in first bath 2).

Following exit of the first rinsing device 2, the cleaned membrane enters second rinsing device 4 without a mechanical cleaning device, where the membrane is immersed into a washing liquid “to which additives have preferably been added”: specifically, “[t]he membrane is impregnated in the second rinsing device with a 0.01 to 1.5% solution of an anionic wetting agent.” *Id.* One of ordinary skill in the art would immediately recognize sodium alkyl sulfonate to be such a wetting agent.

Thus, in the September 28, 2006 declaration, the phrase “the filter dust was removed ... by mechanical treatment with a rotating brush under controlled water rinsing and application of diluted sodium alkyl sulfonate” – read in the context of the original Specification – is not referring to mechanical brushing in the presence of water *and* sodium alkyl sulfonate, but instead refers to the preparation of the membrane sample by (i) mechanical brushing in the presence of water, *followed by* (ii) immersion of the membrane in a washing liquid which include a dilute solution of sodium alkyl sulfonate as a wetting agent additive (*i.e.*, sodium alkyl sulfonate is not required to be involved in the mechanical brushing portion of the process). The Applicants respectfully submit that this is the only correct reading of paragraph 8 of the September 28, 2006 declaration in view of the original Specification’s teachings and therefore there is no § 112 issue with regard to adequate support in the original Specification for the mechanical brushing with water recited in amended claim 1, *i.e.*, this claim is in allowable form without recitation of the presence of sodium alkyl sulfonate as part of the “mechanical brushing” portion of the claim.

2. The Remaining Rejections. Claims 1-17 currently stand rejected under 35 U.S.C. § 103(a) as unpatentable over Dr. Beer's U.S. Patent No. 5,628,960 ("Beer '960"), while claim 50 stands rejected under § 103(a) as unpatentable over Beer '960, in view of U.S. Patent No. 5,826,129 to Hasebe, *et al.* ("Hasebe"). This latter rejection has been rendered moot by the cancellation of claim 50.

With regard to the rejection based on the Beer '960 reference, for the Examiner's convenience the Applicants' arguments in the August 30, 2007 after-final Request For Reconsideration are reproduced below.

The Present Invention: The Applicants have set forth in their prior responses, and with the support of inventor declarations, how the present invention takes a radically different approach to preparation of the recited membranes than the prior art approach, and the superior results obtained as a result of this approach. Specifically, Dr. Beer identified the prior art membrane formation process required the use of costly, highly refined membrane feedstock materials to obtain low-contaminant (low "filter dust") membrane product. Dr. Beer further explained that high-purity feedstocks were used because it was conventionally believed that it was essentially impossible to adequately remove filter dust from a wet membrane without unacceptably damaging the membrane. Contrary to the conventional "purify before forming membrane" approach, the Applicants succeeded in developing a membrane-formation approach in which a membrane is formed from less-highly refined (and thus significantly less costly) feedstocks after discovering that such a membrane could be satisfactorily cleaned while the partially-dried membrane was still wet (again, contrary to the

conventional belief that dust could not be removed from a wet membrane without unacceptable injury to the membrane).

The Beer '960 Reference. Dr. Beer's '960 patent takes a fundamentally different approach to membrane formation than the present invention. In Beer '960, the formation of filter dust is avoided to a substantial extent by using cellulose materials for the production of the casting dope, which do almost not contain any short chain filter dust-forming cellulose materials. Thus, in Beer '960, *the cellulose materials are recrystallized before producing the casting dope.* As already explained in detail, the process according to the present invention comprises the step of removing filter dust from a membrane *after the membrane has been formed* and *before drying*, and does not require a recrystallization of cellulose materials at all.

Contrary to any suggestion that it would have been obvious to clean a membrane after it was formed, as previously noted the Applicants determined demonstrated that a removal of filter dust from a membrane after drying in fact does not lead to advantageous membranes where recrystallization of the cellulose starting materials was not previously performed. This is for precisely the reasons that the conventional view held that an approach such as the present invention would not work – *i.e.*, the dried membranes prepared from unpurified feedstocks suffered from the problems of inability to remove a sufficient amount of filter dust from the dried membrane, and/or developing excessive mechanical defects in the dried membrane surface due to brushing. These mechanical defects of the membrane surface (e.g., irregular grooves which are caused by

severe brushing) lead to unsharp, non-uniform and non-reproducible dividing lines when applying these membranes as diagnostic membranes (cf. the declaration of Dr. Beer of February 2, 2006, ¶ 9). Thus, in the absence of any teaching or suggestion in Beer '960's purified feedstock approach of the present invention's membrane formation followed by cleaning of the partially-dried membrane, Beer '960 does not provide any teaching or suggestion toward the invention recited in independent claims 1, 17 and 50.

3. The Adequacy of Dr. Beer's Declaration. Finally, with regard to the issues regarding whether the scope of Dr. Beer's declaration is commensurate with the original Specification and whether there is sufficient support for the claim 1 limitation of "prior to drying ... removing filter impurities," the Applicants submit that the former issue has been addressed in the discussion of sodium alkyl sulfonate above. As to the latter issue, for the Examiner's convenience the Applicants' remarks from the August 30, 2007 after-final Request For Reconsideration are reproduced below:

The Equivalency of "Casting Dope" and "Phase Inversion". With regard to the request to demonstrate that the "casting dope and "phase inversion" are equivalent, the Applicants respectfully submit that the remarks at page 14 of the March 12, 2007 response have been misinterpreted.

In the declaration of Dr. Beer, it is mentioned unambiguously that "the casting dope samples were then cast in an identical manner by an evaporation process ... with identical wet film thickness, environmental conditions and belt temperature and speed." September 28, 2006 Declaration ¶ 7. In Dr. Beer's

Declaration, he described how a preferred embodiment of the invention was reworked (removing filter dust by brushing while rinsing before drying the membrane). The Specification, however, mentions further measures which may lead to an efficient removal of filter dust. Accordingly, the Applicants respectfully submit that restricting the scope of the claims to only one preferred embodiment would not be appropriate in the present case.

CONCLUSION

The Applicants respectfully submit that in view of the foregoing amendments and remarks, claim 1 and its dependent claims 2 and 15-17 are in condition for allowance. Early and favorable consideration and issuance of a Notice of Allowance for these claims is respectfully requested.

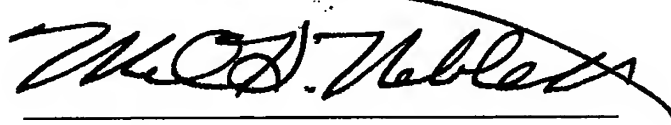
If there are any questions regarding this Preliminary Amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit

Account No. 05-1323 (Docket # 103655.50685US).

Respectfully submitted,

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A handwritten signature in black ink, appearing to read "Mark H. Neblett", written over a horizontal line.

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